

**What is Claimed is:**

1. A method for identifying an agent or event capable of priming a cell for preconditioning and/or inducing preconditioning of a cell, tissue or organ  
5 comprising assessing the ability of the agent or event to modulate a preconditioning protein in a cell, tissue or organ.
2. The method of claim 1 wherein the preconditioning  
10 protein is a protein of an OxPhos pathway, TCA cycle, a  $\text{Ca}^{2+}$  handling protein, a chaperone protein, or a protein selected from aldehyde dehydrogenase, NG-dimethylarginine dimethylaminohydrolase (DDAH) and the RNA binding protein regulatory subunit DJ-1.
- 15 3. A method for diagnosing or monitoring in a subject preconditioning or ischemic, hypoxic, ischemic/reperfusion or ischemic/hypoxic conditions or the ability of a cell, tissue or organ to survive injury  
20 comprising measuring modulation of a preconditioning protein in the subject and comparing the measured modulation to modulation in a control.
4. The method of claim 3 wherein the preconditioning  
25 protein is a protein of an OxPhos pathway, TCA cycle, a  $\text{Ca}^{2+}$  handling protein, a chaperone protein, or a protein selected from aldehyde dehydrogenase, NG-dimethylarginine dimethylaminohydrolase (DDAH) and the RNA binding protein regulatory subunit DJ-1.
- 30 5. A composition for modulating a preconditioning protein in a cell comprising a pharmacological agent that induces preconditioning.
- 35 6. The composition of claim 5 wherein the preconditioning protein is a protein of an OxPhos pathway, TCA cycle, a  $\text{Ca}^{2+}$  handling protein, a chaperone protein, or a protein selected from aldehyde dehydrogenase, NG-

dimethylarginine dimethylaminohydrolase (DDAH) and the RNA binding protein regulatory subunit DJ-1.

7. A method for modulating a preconditioning protein  
5 in a cell comprising contacting the cell with a composition or subjecting to an event that induces preconditioning.

8. The method of claim 7 wherein the preconditioning  
10 protein is a protein of an OxPhos pathway, TCA cycle, a  $\text{Ca}^{2+}$  handling protein, a chaperone protein, or a protein selected from aldehyde dehydrogenase, NG-dimethylarginine dimethylaminohydrolase (DDAH) and the RNA binding protein regulatory subunit DJ-1.

15 9. A composition for priming a cell for preconditioning and/or preconditioning a tissue or organ and preventing cell injury and/or cell death comprising an agent that modulates a preconditioning protein in a cell, tissue or organ.

20 10. The composition of claim 9 wherein the preconditioning protein is a protein of an OxPhos pathway, TCA cycle, a  $\text{Ca}^{2+}$  handling protein, a chaperone protein, or a protein selected from aldehyde dehydrogenase, NG-  
25 dimethylarginine dimethylaminohydrolase (DDAH) and the RNA binding protein regulatory subunit DJ-1.

11. A method for priming a cell for preconditioning  
30 and/or preconditioning a tissue or organ and preventing cell injury and/or cell death comprising modulating in a cell, tissue or organ a preconditioning protein.

12. The method of claim 11 wherein the  
35 preconditioning protein is a protein of an OxPhos pathway, TCA cycle, a  $\text{Ca}^{2+}$  handling protein, a chaperone protein, or a protein selected from aldehyde dehydrogenase, NG-dimethylarginine dimethylaminohydrolase (DDAH) and the RNA binding protein regulatory subunit DJ-1.